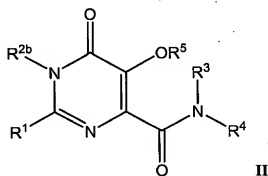
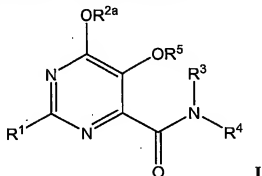


## What Is Claimed:

1. A compound selected from Formulas I and II:



or a pharmaceutically acceptable salt thereof, and including all enol, tautomeric, and resonance isomers, enantiomers, diastereomers, and racemic mixtures thereof; wherein:

- 10  $R^1$  is selected from H, F, Cl, Br, I, OH, OR, amino ( $-NH_2$ ), ammonium ( $-NH_3^+$ ), alkylamino ( $-NHR$ ), dialkylamino ( $-NR_2$ ), trialkylammonium ( $-NR_3^+$ ), carboxyl ( $-CO_2H$ ), sulfate, sulfamate, sulfonate, 5-7 membered ring sultam, 4-dialkylaminopyridinium, alkylsulfone ( $-SO_2R$ ), arylsulfone ( $-SO_2Ar$ ), arylsulfoxide ( $-SOAr$ ), arylthio ( $-SAr$ ), sulfonamide ( $-SO_2NR_2$ ), alkylsulfoxide ( $-SOR$ ), formyl
- 15 ( $-CHO$ ), ester ( $-CO_2R$ ), amido ( $-C(=O)NR_2$ ), 5-7 membered ring lactam, 5-7 membered ring lactone, nitrile ( $-CN$ ), azido ( $-N_3$ ), nitro ( $-NO_2$ ),  $C_1-C_{18}$  alkyl,  $C_1-C_{18}$  substituted alkyl,  $C_2-C_{18}$  alkenyl,  $C_2-C_{18}$  substituted alkenyl,  $C_2-C_{18}$  alkynyl,  $C_2-C_{18}$  substituted alkynyl,  $C_6-C_{20}$  aryl,  $C_6-C_{20}$  substituted aryl,  $C_2-C_{20}$  heterocycle, and  $C_2-C_{20}$

substituted heterocycle, phosphonate, phosphate, polyethyleneoxy, a protecting group,  $L-A^3$ , and a prodrug moiety;

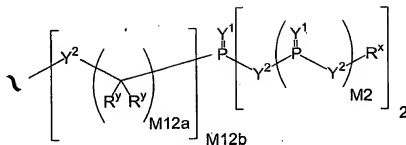
$R^{2a}$  and  $R^5$  are each independently selected from H, carboxyl ( $-CO_2H$ ), sulfate, sulfamate, sulfonate, 5-7 membered ring sultam, 4-dialkylaminopyridinium, alkylsulfone ( $-SO_2R$ ), arylsulfone ( $-SO_2Ar$ ), arylsulfoxide ( $-SOAr$ ), arylthio ( $-SAr$ ), sulfonamide ( $-SO_2NR_2$ ), alkylsulfoxide ( $-SOR$ ), formyl ( $-CHO$ ), ester ( $-CO_2R$ ), amido ( $-C(=O)NR_2$ ), 5-7 membered ring lactam, 5-7 membered ring lactone, nitrile ( $-CN$ ), azido ( $-N_3$ ), nitro ( $-NO_2$ ),  $C_1-C_{18}$  alkyl,  $C_1-C_{18}$  substituted alkyl,  $C_2-C_{18}$  alkenyl,  $C_2-C_{18}$  substituted alkenyl,  $C_2-C_{18}$  alkynyl,  $C_2-C_{18}$  substituted alkynyl,  $C_6-C_{20}$  aryl,  $C_6-C_{20}$  substituted aryl,  $C_2-C_{20}$  heterocycle, and  $C_2-C_{20}$  substituted heterocycle, phosphonate, phosphate, polyethyleneoxy, a protecting group,  $L-A^3$ , and a prodrug moiety;

$R^{2b}$ ,  $R^3$ , and  $R^4$  are each independently selected from H, OH, OR, amino ( $-NH_2$ ), ammonium ( $-NH_3^+$ ), alkylamino ( $-NHR$ ), dialkylamino ( $-NR_2$ ), trialkylammonium ( $-NR_3^+$ ), carboxyl ( $-CO_2H$ ), sulfate, sulfamate, sulfonate, 5-7 membered ring sultam, 4-dialkylaminopyridinium, alkylsulfone ( $-SO_2R$ ), arylsulfone ( $-SO_2Ar$ ), arylsulfoxide ( $-SOAr$ ), arylthio ( $-SAr$ ), sulfonamide ( $-SO_2NR_2$ ), alkylsulfoxide ( $-SOR$ ), formyl ( $-CHO$ ), ester ( $-CO_2R$ ), amido ( $-C(=O)NR_2$ ), 5-7 membered ring lactam, 5-7 membered ring lactone, nitrile ( $-CN$ ), azido ( $-N_3$ ), nitro ( $-NO_2$ ),  $C_1-C_{18}$  alkyl,  $C_1-C_{18}$  substituted alkyl,  $C_2-C_{18}$  alkenyl,  $C_2-C_{18}$  substituted alkenyl,  $C_2-C_{18}$  alkynyl,  $C_2-C_{18}$  substituted alkynyl,  $C_6-C_{20}$  aryl,  $C_6-C_{20}$  substituted aryl,  $C_2-C_{20}$  heterocycle, and  $C_2-C_{20}$  substituted heterocycle, phosphonate, phosphate, polyethyleneoxy, a protecting group,  $L-A^3$ , and a prodrug moiety;

R is independently selected from H,  $C_1-C_{18}$  alkyl,  $C_1-C_{18}$  substituted alkyl,  $C_2-C_{18}$  alkenyl,  $C_2-C_{18}$  substituted alkenyl,  $C_2-C_{18}$  alkynyl,  $C_2-C_{18}$  substituted alkynyl,  $C_6-C_{20}$  aryl,  $C_6-C_{20}$  substituted aryl,  $C_2-C_{20}$  heterocycle,  $C_2-C_{20}$  substituted heterocycle, phosphonate, phosphate, polyethyleneoxy, a protecting group, and a prodrug moiety;

L is selected from a bond, O, S, NR, N-OR,  $C_1-C_{12}$  alkylene,  $C_1-C_{12}$  substituted alkylene,  $C_2-C_{12}$  alkenylene,  $C_2-C_{12}$  substituted alkenylene,  $C_2-C_{12}$  alkynylene,  $C_2-C_{12}$  substituted alkynylene,  $C_6-C_{20}$  arylene,  $C_6-C_{20}$  substituted arylene,  $C(=O)NH$ ,  $C(=O)$ ,  $S(=O)_2$ ,  $C(=O)NH(CH_2)_n$ , and  $(CH_2CH_2O)_n$ , where n may be 1, 2, 3, 4, 5, or 6;

A<sup>3</sup> has the structure:



where:

Y<sup>1</sup> is independently O, S, NR<sup>x</sup>, N(O)(R<sup>x</sup>), N(OR<sup>x</sup>), N(O)(OR<sup>x</sup>), or N(N(R<sup>x</sup>)<sub>2</sub>);

Y<sup>2</sup> is independently a bond, O, NR<sup>x</sup>, N(O)(R<sup>x</sup>), N(OR<sup>x</sup>), N(O)(OR<sup>x</sup>), N(N(R<sup>x</sup>)<sub>2</sub>), -S(O)- (sulfoxide), -S(O)<sub>2</sub>- (sulfone), -S- (sulfide), or -S-S- (disulfide);

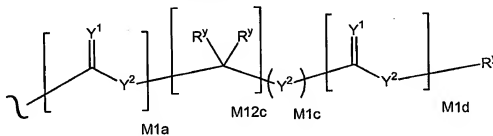
M2 is 0, 1 or 2;

M12a is 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, or 12;

M12b is 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, or 12;

R<sup>y</sup> is independently H, C<sub>1</sub>-C<sub>18</sub> alkyl, C<sub>1</sub>-C<sub>18</sub> substituted alkyl, C<sub>6</sub>-C<sub>20</sub> aryl, C<sub>6</sub>-C<sub>20</sub> substituted aryl, or a protecting group, or where taken together at a carbon atom, two vicinal R<sup>y</sup> groups form a carbocycle or a heterocycle; and

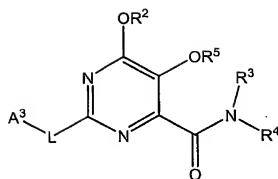
R<sup>x</sup> is independently H, C<sub>1</sub>-C<sub>18</sub> alkyl, C<sub>1</sub>-C<sub>18</sub> substituted alkyl, C<sub>6</sub>-C<sub>20</sub> aryl, C<sub>6</sub>-C<sub>20</sub> substituted aryl, or a protecting group, or the formula:



where M1a, M1c, and M1d are independently 0 or 1, and M12c is 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11 or 12; and

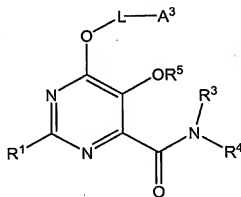
wherein at least one of R, R<sup>1</sup>, R<sup>2a</sup>, R<sup>2b</sup>, R<sup>3</sup>, R<sup>4</sup>, and R<sup>5</sup> comprises a phosphonate group.

2. A compound according to claim 1 having the structure:



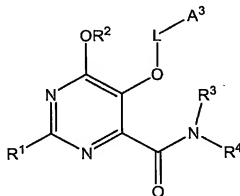
or a pharmaceutically acceptable salt thereof, and including enol and tautomeric resonance isomers.

3. A compound according to claim 1 having the structure:



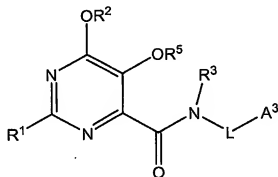
or a pharmaceutically acceptable salt thereof, and including enol and tautomeric resonance isomers.

4. A compound according to claim 1 having the structure:



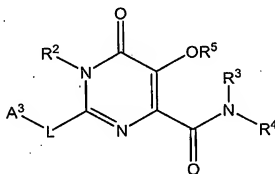
or a pharmaceutically acceptable salt thereof, and including enol and tautomeric resonance isomers.

5. A compound according to claim 1 having the structure:



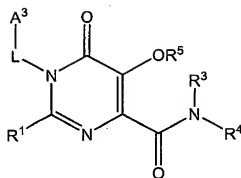
- 5 or a pharmaceutically acceptable salt thereof, and including enol and tautomeric resonance isomers.

6. A compound according to claim 1 having the structure:



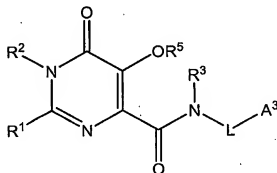
- 10 or a pharmaceutically acceptable salt thereof, and including all enol, tautomeric, and resonance isomers, enantiomers, diastereomers, and racemic mixtures thereof.

7. A compound according to claim 1 having the structure:



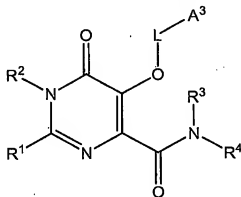
or a pharmaceutically acceptable salt thereof, and including enol and tautomeric resonance isomers.

8. A compound according to claim 1 having the structure:



or a pharmaceutically acceptable salt thereof, and including enol and tautomeric resonance isomers.

9. A compound according to claim 1 having the structure:



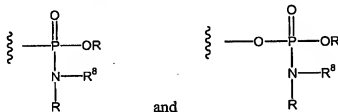
or a pharmaceutically acceptable salt thereof, and including enol and tautomeric resonance isomers.

- 10 The compound of claim 1 wherein substituted alkyl, substituted alkenyl, substituted alkynyl, substituted aryl, and substituted heterocycle are independently substituted with one or more substituents selected from F, Cl, Br, I, OH, amino ( $-\text{NH}_2$ ), ammonium ( $-\text{NH}_3^+$ ), alkylamino ( $-\text{NHR}$ ), dialkylamino ( $-\text{NR}_2$ ), trialkylammonium ( $-\text{NR}_3^+$ ),  $\text{C}_1$ - $\text{C}_8$  alkyl,  $\text{C}_1$ - $\text{C}_8$  alkylhalide, carboxylate, thiol ( $-\text{SH}$ ), sulfate ( $-\text{OSO}_3\text{R}$ ), sulfamate, sulfonate ( $-\text{SO}_3\text{R}$ ), 5-7 membered ring sultam,  $\text{C}_1$ - $\text{C}_8$  alkylsulfonate,  $\text{C}_1$ - $\text{C}_8$  alkylamino, 4-dialkylaminopyridinium,  $\text{C}_1$ - $\text{C}_8$  alkylhydroxyl,  $\text{C}_1$ - $\text{C}_8$  alkylthiol, alkylsulfone ( $-\text{SO}_2\text{R}$ ), arylsulfone ( $-\text{SO}_2\text{Ar}$ ), arylsulfoxide ( $-\text{SOAr}$ ), arylthio ( $-\text{SAr}$ ), sulfonamide ( $-\text{SO}_2\text{NR}_2$ ), alkylsulfoxide ( $-\text{SOR}$ ), ester ( $-\text{C}(=\text{O})\text{OR}$ ), amido ( $-\text{C}(=\text{O})\text{NR}_2$ ), 5-7 membered ring lactam, 5-7 membered ring lactone, nitrile ( $-\text{CN}$ ), azido ( $-\text{N}_3$ ), nitro ( $-\text{NO}_2$ ),  $\text{C}_1$ - $\text{C}_8$  alkoxy ( $-\text{OR}$ ),  $\text{C}_1$ - $\text{C}_8$  alkyl,  $\text{C}_1$ - $\text{C}_8$  substituted alkyl,  $\text{C}_6$ - $\text{C}_{20}$  aryl,  $\text{C}_6$ - $\text{C}_{20}$  substituted aryl,  $\text{C}_2$ - $\text{C}_{20}$  heterocycle, and  $\text{C}_2$ - $\text{C}_{20}$  substituted heterocycle, phosphonate, phosphate, polyethyleneoxy, and a prodrug moiety.

11 A compound of claim 1 wherein  $\text{R}^{2a}$  and  $\text{R}^{2b}$  are selected from H,  $\text{C}(=\text{O})\text{OR}$ ,  $\text{C}(=\text{O})\text{NR}_2$ ,  $\text{C}(=\text{O})\text{R}$ ,  $\text{SO}_2\text{NR}_2$  (sulfamate), and a prodrug moiety.

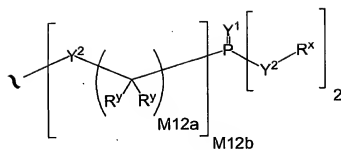
12 The compound of claim 1 where  $\text{R}^3$  or  $\text{R}^4$  is 4-fluorobenzyl.

- 13 The compound of claim 1 wherein at least one of  $\text{R}^1$ ,  $\text{R}^{2a}$ ,  $\text{R}^{2b}$ ,  $\text{R}^3$ ,  $\text{R}^4$ , and  $\text{R}^5$  comprise a prodrug moiety selected from the structures:

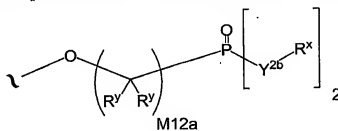


wherein  $\text{R}^8$  is comprised of an ester, an amide, or a carbamate.

- 14 The compound of claim 1 wherein phosphonate group has the structure:



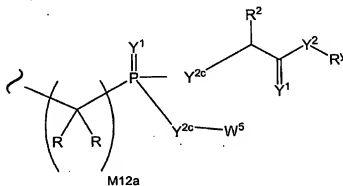
15. The compound of claim 14 wherein phosphonate group has the structure:



where  $Y^{2b}$  is O or N( $R^x$ ).

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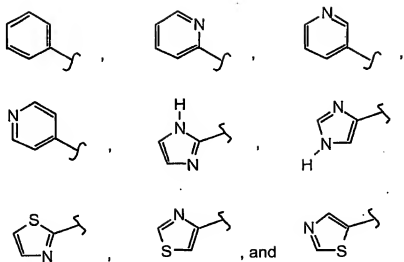
16. The compound of claim 14 wherein phosphonate group has the structure:



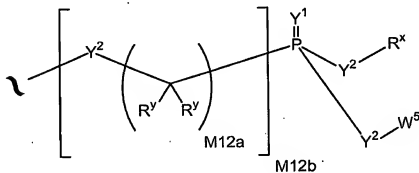
where  $W^5$  is a carbocycle, and  $Y^{2c}$  is O, N( $R^3$ ) or S.

17. The compound of claim 16 wherein  $W^5$  is selected from the structures:

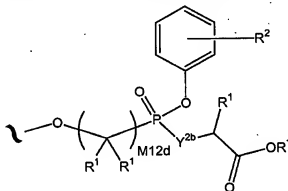




18. The compound of claim 14 wherein phosphonate group has the structure:



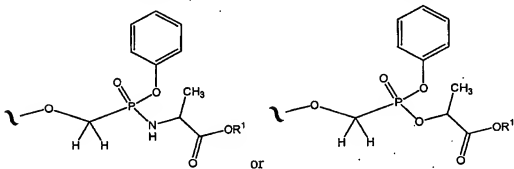
19. The compound of claim 18 wherein phosphonate group has the structure:



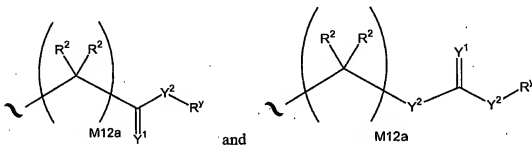
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wherein  $Y^{2b}$  is O or  $N(R^x)$ ; M12d is 1, 2, 3, 4, 5, 6, 7 or 8;  $R^1$  is H or  $C_1-C_6$  alkyl; and the phenyl carbocycle is substituted with 0 to 3  $R^2$  groups where  $R^2$  is  $C_1-C_6$  alkyl or substituted alkyl.

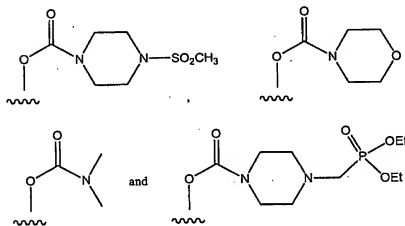
20. The compound of claim 19 wherein phosphonate group has the structure:



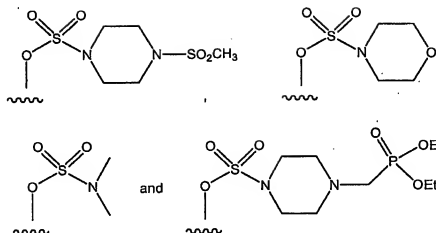
21. The compound of claim 14 wherein  $R^x$  is selected from the structures:



22. The compound of claim 21 wherein  $R^1$  is selected from the structures:

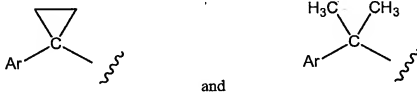


23. The compound of claim 21 wherein  $R^1$  is selected from the structures:



24. A compound of claim 1 wherein  $R^1$  comprises a phosphonate prodrug moiety.

25. The compound of claim 1 wherein  $R^3$  or  $R^4$  is selected from the structures:

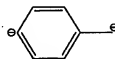


26. The compound of claim 6 wherein L is arylene.

27. The compound of claim 6 wherein L is  $C_1$ - $C_{12}$  alkylene.

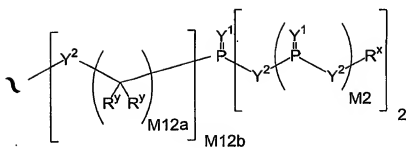
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28. The compound of claim 26 wherein L is

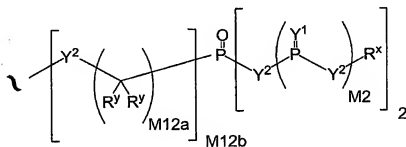


29. The compound of claim 27 wherein L is  $C_2$  alkylene.

30. The compound of claim 6 wherein  $A^3$  has the structure:

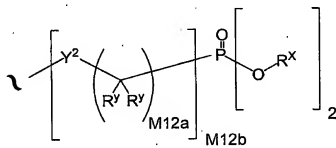


31. The compound of claim 6 wherein  $A^3$  has the structure:

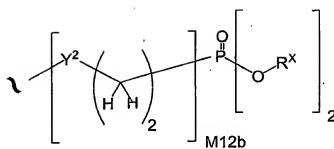


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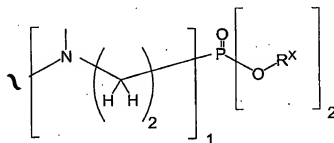
32. The compound of claim 6 wherein  $A^3$  has the structure:



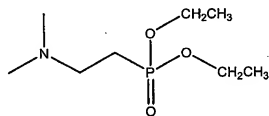
33. The compound of claim 6 wherein  $A^3$  has the structure:



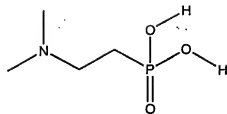
34. The compound of claim 6 wherein A<sup>3</sup> has the structure:



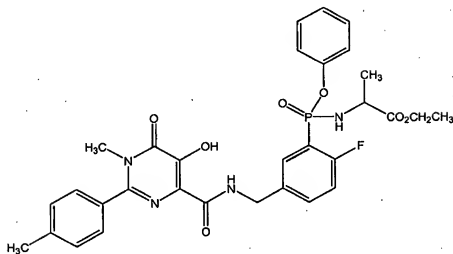
- 5 35. The compound of claim 30 wherein A<sup>3</sup> has the structure,



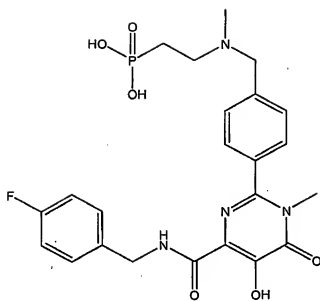
36. The compound of claim 30 wherein A<sup>3</sup> has the structure,



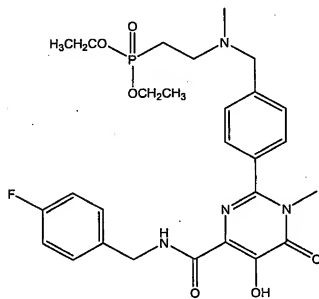
37. A compound of claim 1 having the structure:



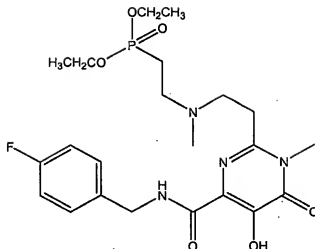
- 5 38. A compound of claim 1 having the structure:



39. A compound of claim 1 having the structure:



- 5 40. A compound of claim 1 having the structure:



41. A pharmaceutical composition comprising a therapeutically effective amount of a compound of claim 1 and a pharmaceutically acceptable carrier.

42. A pharmaceutical composition comprising a therapeutically effective amount of a compound of claim 1 in combination with a therapeutically effective amount of an AIDS treatment agent selected from:

- (1) an AIDS antiviral agent,
- (2) an anti-infective agent, and
- (3) an immunomodulator.

43. The composition of claim 42 wherein the antiviral agent is an HIV protease inhibitor.

44. A process for making a pharmaceutical composition comprising combining a compound of claim 1 and a pharmaceutically acceptable carrier.

45. A method of inhibiting HIV integrase, comprising the administration to a mammal in need of such treatment of a therapeutically effective amount of a compound of claim 1.

46. A method of treating infection by HIV, or of treating AIDS or ARC, comprising administration to a mammal in need of such treatment of a therapeutically effective amount of a compound of claim 1.